Volunteer Lake Assessment Program Individual Lake Reports

SUNSET LAKE, ALTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	3,598	**Max. Depth (m):**	23.7	**Flushing Rate (yr^{-1})**	1.7
Surface Area (Ac.):	205	**Mean Depth (m):**	5.6	**P Retention Coef:**	0.55
Shore Length (m):	5,600	**Volume (m^3):**	4,651,000	**Elevation (ft):**	808

TROPHIC CLASSIFICATION

Year	Trophic class
2000	OLIGOTROPHIC
2008	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

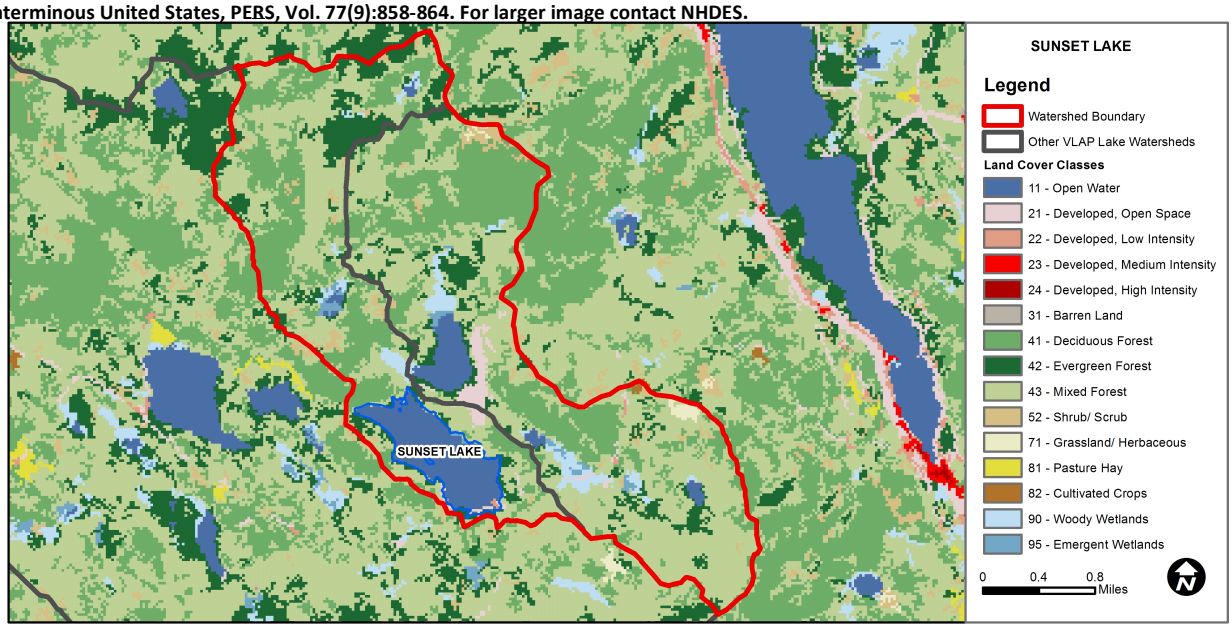
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

SUNSET LAKE HIDDEN VALLEY BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	7.75	Barren Land	0	Grassland/Herbaceous	0.44
Developed-Open Space	1.65	Deciduous Forest	29.3	Pasture Hay	0
Developed-Low Intensity	0.09	Evergreen Forest	10.93	Cultivated Crops	0.07
Developed-Medium Intensity	0	Mixed Forest	44.02	Woody Wetlands	2.57
Developed-High Intensity	0	Shrub-Scrub	2.48	Emergent Wetlands	0.72

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
SUNSET LAKE, ALTON, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** Chlorophyll levels increased slightly from May to August but were much less than the NH lake median. Historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity were low and well below the NH lake median.
- **E. COLI:** E. coli levels were well below the state standard for surface waters.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low, decreased from 2011, and were less than the NH lake median. Historical trend analysis indicates a relatively stable epilimnetic (upper water layer) phosphorus level since monitoring began. Inlet phosphorus was slightly above average in May likely due to the significant rain event prior to sampling.
- **TRANSPARENCY:** Transparency improved from May to August and was the highest measured since 2006. Historical trend analysis indicates transparency fluctuates from year to year.
- **TURBIDITY:** Deep spot and tributary turbidity levels were low throughout the summer.
- **PH:** pH levels were lower than desirable in the metalimnion (middle water layer) and hypolimnion (lower water layer).
- **RECOMMENDED ACTIONS:** Increase monitoring frequency to three times per summer to better assess summer water quality and historical trends. Turbidity and phosphorus remained relatively low after significant rain events prior to sampling in May which is a good sign. Keep up the great work!

Dissolved Oxygen & Temperature Profile

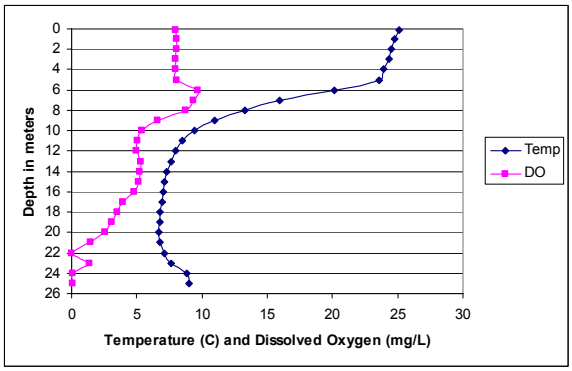


Table 1. 2012 Average Water Quality Data for SUNSET LAKE

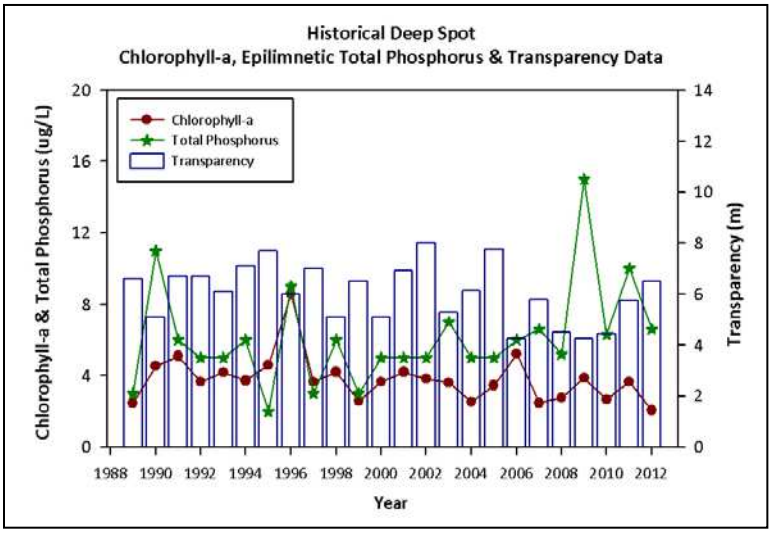
Station Name	Alk.	Chlor-a	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	uS/cm	#/100ml	ug/l	m		ntu	
						NVS	VS		
Deep Epilimnion	3.05	2.06	27.2		5	6.50	6.50	0.56	6.82
Deep Metalimnion			26.8		5			0.83	6.48
Deep Hypolimnion			27.6		7			0.45	6.08
Inlet			27.5	60	8			0.62	6.63
Outlet			27.5	20	5			0.51	6.83

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Stable	Data not significantly increasing or decreasing.
Transparency	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.
Phosphorus (epilimnion)	Stable	Data not significantly increasing or decreasing.



This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:
Sara Steiner
PO Box 95
Concord, NH 03302-0095
(603) 271-2658
sara.steiner@des.nh.gov